

CLAIMS

1. A Bayer process which includes a step of treating
treating any one or more of: (a) Bayer liquor or liquors
5 produced in the process, (b) precipitated aluminium
trihydrate particles produced in the process, and (c)
other solids added to or produced in the process, with
ultrasonic energy and destroying organics in the liquor or
liquors, on the precipitated aluminium trihydrate
10 particles, and on the other solids.
2. The process defined in claim 1 wherein the
treatment step is carried out on a Bayer liquor or liquors
and/or precipitated aluminium trihydrate particles from
15 any part of the Bayer process.
3. The process defined in claim 1 wherein the
treatment step is carried out on side streams of the Bayer
liquor or liquors from any part of the Bayer process.
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4. The process defined in any one of the preceding
claims wherein the treatment step is carried out on a
Bayer liquor or liquors and/or precipitated aluminium
trihydrate particles and/or other solids that have
25 relatively high concentrations of organics compared to
other Bayer liquors and particles in the process.
5. The process defined in any one of the preceding
claims wherein the precipitated aluminium trihydrate
30 particles are intermediate and fine seed particles that
are separated from a precipitation slurry from a
precipitation step of the Bayer process.
6. The process defined in any one of the preceding
35 claims wherein the other solids is a collector material
for organics.

7. The process defined in claim 6 wherein the treatment step includes separating the collector material with attached organics from the Bayer liquor or liquors into a side stream and treating the side stream with
5 ultrasonic energy and destroying organics on the collector material.

8. The process defined in claim 7 wherein the treatment step includes regenerating the collector
10 material for reuse in the process to collect more organics for ultrasonic energy treatment.

9. The process defined in any one of claims 6 to 9 wherein the collector material includes resins and
15 activated carbon.

10. The process defined in any one of claims 6 to 10 wherein the collector material includes particles or beads of collector material.

20 11. The process defined in any one of claims 6 to 11 wherein the collector material includes particles or beads of collector material that are sufficiently large to be readily separated from Bayer liquor.

25 12. The process defined in any one of claims 6 to 11 wherein the collector material is a material that has a higher density than Bayer liquor to facilitate separation from Bayer liquor by settling.

30 13. The process defined in any one of claims 6 to 11 wherein the collector material is a material that has a lower density than Bayer liquor and/or is hydrophobic to facilitate separation from Bayer liquor by flotation.

35 14. The process defined in any one of claims 6 to 13 wherein the collector material is a material that can be

separated magnetically.

15. The process definrd in claim 14 wherein the collector material includes fine particles prepared by
5 applying an organic/polymer coating onto fine precipitated iron containing particles.

16. The process defined in any one of the preceding claims wherein the treatment step includes treating the
10 Bayer liquor or liquors and/or precipitated aluminium trihydrate particles and/or other solids with ultrasonic energy of sufficiently high energy that it causes cavitation in Bayer liquor or at the surface of the particles.

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17. The process defined in any one of the preceding claims wherein the treatment step includes treating the Bayer liquor or liquors and/or precipitated aluminium trihydrate particles and/or other solids with a continuous
20 stream of ultrasonic energy or pulses stream of ultrasonic energy.

18. A Bayer process which includes a step of treating Bayer liquor or liquors produced in the process with
25 ultrasonic energy and destroying organics in the liquor or liquors.

19 A Bayer process which includes a step of treating precipitated aluminium trihydrate particles produced in
30 the process with ultrasonic energy and destroying organics on the particles.

20. A Bayer process which includes a step of treating a collector material for organics added to the process
35 with ultrasonic energy and destroying organics on the collector material.